

TOWN OF JOHNSTON, RHODE ISLAND WATER SUPPLY SYSTEM MANAGEMENT PLAN

EXECUTIVE SUMMARY

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Executive Summary

This Water Supply System Management Plan (WSSMP) has been prepared as required under Rhode Island General Laws 46-15.3, as amended and titled "The Water Supply System Management Planning Act" (Act). The legislative authority to effectuate the goals and policies of this Act has been conferred to the Rhode Island Water Resources Board (RIWRB). To this end, the RIWRB has promulgated the Rules and Regulations for Water Supply System Management Planning, October 1998, as amended to implement the provisions of the Act.

Under this legislation, the Town of Johnston -- Johnston Water Control District (JWCD), as a water purveyor supplying over 50 million gallons of water per year is responsible for the preparation and adoption of a WSSMP. It is also required that the Town update this WSSMP periodically (30 month updates) and every five years, or as otherwise stipulated in the Regulations.

This WSSMP has been prepared to provide the proper framework to promote the effective and efficient conservation, development, utilization and protection of the natural water resources of the State as utilized by the Town. Further, the overall goals shall be consistent with State Guide Plan Element 721, "Water Supply Policies for Rhode Island"; State Guide Plan Element 125, "Scituate Reservoir Watershed Management Plan" and State Guide Plan Element 724, "Rhode Island Drought management Plan". The purpose of this WSSMP is to outline the objectives of the Water Supply System Management Planning process for the Town of Johnston Water Control District, and to serve as a guide to employ the proper decision-making processes.

The WSSMP contains a detailed description of the water system and includes the policies and procedures related to the general operation and management of the water system. The Emergency Management section relates to the vulnerability assessment of the water system for use in emergency planning. It shall be incumbent upon the JWCD to implement the recommendations and procedures outlined in this WSSMP in order to comply with the overall requirements of the Act.

General

The completion of the year 2008 WSSMP was premised on data and records that were available from fiscal years 1997 through 2007. To a large extent prior to the year 2000, the water system had not maintained information and records relating to the water system that are commonly utilized to complete a WSSMP and any available records were not in a format that was readily transferable for use in the preparation of a WSSMP. In addition, critical aspects of water system operation required enhancement (i.e. data collection, billing procedures, etc.) and reassessment.

The Town in recognition of these facts and beginning in the fiscal year 1999/2000 initiated a review of the operation, management and staffing of the water system with the intent on improving overall system operation, financial self-reliance, reliability and regulatory compliance.

The Town is firmly committed to improving overall water system operation as is evidenced by the progress completed to date and as documented herein in this submission of October 2008. This is however a long and arduous process which will take several years or longer to fully implement. The Town initially prioritized the requirements for improvements and started on those items, which either due to protection of public health, financial stability and operation was determined to be most critical. There is a general plan to continue with the process however, it should also be noted that the water system might be encumbered financially to fully implement all the changes in a timely fashion. Nevertheless, these other items will be addressed in the future. The most significant items that were evaluated and addressed since completion of the 2002 Plan and are included in this 2008 Plan and include the following.

- Water system organization and staffing.
- Wholesale supply and demand metering and record maintenance.
- Billing and collections.
- Customer meter calibration, testing, maintenance and repair.
- Major system infrastructure inspection and evaluation.
- Preparation of a Clean Water Infrastructure Plan.
- Non-account or unaccounted for water and system leakage testing.
- Compliance with regulatory requirements (i.e. Safe Drinking Water Act).

The next step in the process will be to develop and implement these other programs in a manner and fashion as financial and manpower resources permit. As indicated previously, it is not practical to institute all changes in a short period of time. Certain programs require greater financial resources, operator training, equipment procurement, municipal bidding for services that cannot be completed in house, etc. A description and proposed implementation schedule is provided in the body of the Plan.

Background

The Town of Johnston was established by a home rule charter originally adopted on November 6, 1962 and has since been amended. The charter established an elected Mayor-Council type government, responsible for the enactment of local legislation and administration of the Town government. The Department of Public Works is responsible for all functions and services of the Town relating to the water supply system as well as numerous others. Figure 1 in the body of the Plan outlines the Town's organizational structure.

Water System Description

The existing Johnston Water Control District water system was developed primarily from the original water supply system that originated in the pre World War II era. Source of supply for the system originally was wholesale water purchased from the Cranston Water Department, via six interconnections located off a common 24-inch transmission main in Plainfield Pike. Currently, this 24-inch water main is owned and operated by Providence Water. Each of the interconnections is equipped with a master meter assembly and bypass. This pressure zone is operated at a hydraulic gradient of approximately 478 feet, which is determined by the water level in the Providence Water Lawton Hill Reservoir. The two primary interconnections (Green Hill Road and Simmonsville Avenue) account for approximately 95 percent of the JWCD source water. Each of the interconnections is discussed in further detail in Section 2.4 of this Plan.

As the Johnston water system expanded, the need for a booster pump station became evident, so the Shun Pike booster station was constructed in the 1970s. Improvements to this station were completed in the 1980's and included a 4000-gallon hydro-pneumatic steel tank, a fire pump

rated at 500 gpm, and a new emergency generator system. The capacity of this station is 0.144 mgd, and overall, is considered to be in good condition.

The Central Avenue booster station was constructed in the late 1990's. Telemetry equipment relays the water level in the Golden View Drive water storage tank back to the booster station, which in turn is used to control the sequencing of the pumps. The station is fitted with two (2) 600-gpm pumps, with the capability of being upgraded with a third. The areas located in the Town of Johnston to the north and west are supplied by this station.

Being that the vast majority of the transmission and distribution system was installed circa 1980, the piping system is considered to be in excellent condition. Materials of construction include asbestos cement (AC), polyvinyl chloride (PVC), cement-lined ductile iron (DI), and unlined cast iron (CI). With the exception of CI, all of these materials offer excellent corrosion resistance and afford long-term durability. The oldest sections of the JWCD consist of cast iron water mains installed sometime before 1950. These mains are located in the southeast region of the service area.

The JWCD maintains one elevated storage tank located off of Golden View Drive. The 121-foot steel fluted tower has a 750,000-gallon capacity. Constructed in 1987, the structure was designed to provide a minimum of 35 psi in the Central Avenue pressure zone, and is reported to be in good condition.

Policy and Procedure

The service population of the JWCD is comprised of residential, commercial, industrial and government customers of which there are approximately 1,760 metered accounts. It is estimated that approximately 5,067 out of the 27,000 residents in Town are serviced by the JWCD. Areas to the east of Interstate 295 are served by Providence Water with exception of the Simmonsville Avenue section to the north of Plainfield Pike. Also, the Greenville Water District services a small isolated area at the extreme northwestern reaches of Town. Estimates are not available to determine service populations for the aforementioned, or the number of private well owners. Current average day customer demand is 0.746 mgd. Under projected water use for the 5-year

planning period, it is expected that the average day demand will be equal to 0.753 mgd. For the 20-year planning period, it is expected that the demand will be 0.768 mgd. These projections are based primarily on population projections and do not account for significant water savings potentially realized through demand management techniques. They do, however, consider non-account water at the current rate of 8.1 percent.

It is anticipated that the existing wholesale supply source (i.e. Providence Water) will be adequate to meet anticipated future demands. There is currently no contract for purchase of wholesale water between the Town and Providence Water.

The Town has entered into agreement with Providence Water whereas the responsibility of ownership including calibration and/or replacement of the master meters will be the responsibility of Providence Water. The Town is responsible for maintaining the physical structure (i.e. meter vault) containing the master meter assembly. This agreement was completed in early 2003, which permits for accurate accounting of wholesale water purchases.

For three of the previous five years (2006 – 2005 and 2002), the JWCD has exhibited non-account water volumes of 0.23, 30.3 and 38 percent, respectively. This element of water supply management planning shall continue to be closely monitored in the future.

Over the course of the past several years, an aggressive program has been instituted to improve the reliability, monitoring and performance of major system infrastructure. The most significant modifications and improvements include the following.

- Address concerns / issues contained in RIDOH Sanitary Survey of Spring 2008. Improvements included alleviating flooding in pits, adding sampling ports, screening vents and miscellaneous clarifications to sample operations.
- Shun Pike Pump Station Upgrade: Improvements to the hydro pneumatic tank, pump system and emergency power supply.

- Water Storage Tank: Replace landline telephone communications line from storage tank to pump station with license free wireless signal telemetry system. This provides greater degree of reliability.
- Perform a comprehensive inspection of the water storage tank by an outside inspection firm
- Install UPS (uninterrupted power supply) at the tank level telemetry system
- Miscellaneous Maintenance and System Repair / Upgrades:
 - Two (2) hydrant replacements
 - Forty Eight (48) hydrant repairs
 - Seventy Five (75) encoder (meter read) repairs
 - Eleven (11) curb stop replacements
 - Replacement of Access Hatches on Master Meter Vaults
 - Water Main Extensions: approximately 3,000 feet of 8 inch ductile iron pipe
- Large User Master Meter Replacement: Replace existing 8 inch malfunctioning meter with new 6 inch meter. The new meter provides greater degree of accuracy at all flow ranges.
- Replacement of over 250 residential meters as well as implementation of meter testing and repair/replacement program.
- Comprehensive performance and maintenance of the Shun Pike and Central Avenue booster pump stations. Where required, components were replaced or rehabilitated.

The Emergency Management section of this Plan (Volume 2) establishes the responsibilities and authority within the JWCD for responding to most probable emergencies and outlines specific tasks for carrying out functional and constructive solutions based on a review of the potential emergencies and risks. The procedures outlined are consistent with the goals of the State Emergency Water Supply System Management Plan. It is also intended that this document provide guidance to ensure that the primary aspects of recovery from an emergency are addressed in an organized manner to aid in an efficient response and in maintaining drinking water quality and quantity.